Space Weather Forecast

Issued on Sunday, 23 October 2022 at 13:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Very Low, with no further common class flares observed. There are currently five sunspot regions on the visible Sun, however these are all currently small and simple regions. No Earth-directed CMEs have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind started at Low levels before becoming slightly-elevated by 23/0500 UTC, with a further increase thereafter to elevated levels by 23/0900 UTC. The strength of the magnetic field was mostly Moderate. The important north-south component was moderately negative (southward) until around 22/1700 UTC when mostly Weak levels were observed. Geomagnetic activity was at Active to Minor Geomagnetic Storm level to start the period becoming Quiet to Unsettled by 22/2400 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to continue Low or Very Low, with little activity currently on the visible side of the sun.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast period. Elevated solar winds are likely to reach Strong levels in the coming hours of Day 1 (23 Oct) and into Day 2 (24 Oct) as the fast wind from a coronal hole becomes established. Solar winds potentially easing from Day 3 (25 Oct) into Day 4 (26 Oct) but probably remaining at Elevated levels. Geomagnetic activity starting Quiet, may become Unsettled to Active at times and there is a decreasing Chance of Minor Geomagnetic Storms, especially during Days 1 and 2 (23 and 24 Oct).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	30	20	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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